

14

01/23/2002



OIPE

## RAW SEQUENCE LISTING

DATE: 01/23/2002

PATENT APPLICATION: US/10/033,269

TIME: 11:30:38

Input Set : A:\BB1446 US NA Seq Listing.txt

Output Set: N:\CRF3\01232002\J033269.raw

**ENTERED**

3 <110> APPLICANT: Gutteridge, Steve  
 4 Harvell, Leslie T.  
 5 Orozco, Buddy  
 7 <120> TITLE OF INVENTION: Plant Genes Encoding Pantothenate Synthetase  
 9 <130> FILE REFERENCE: BB1446 US NA  
 C--> 11 <140> CURRENT APPLICATION NUMBER: US/10/033,269  
 C--> 12 <141> CURRENT FILING DATE: 2001-11-13  
 14 <150> PRIOR APPLICATION NUMBER: 60/247,938  
 15 <151> PRIOR FILING DATE: 2000-11-13  
 17 <160> NUMBER OF SEQ ID NOS: 15  
 19 <170> SOFTWARE: Microsoft Office 97  
 21 <210> SEQ ID NO: 1  
 22 <211> LENGTH: 1443  
 23 <212> TYPE: DNA  
 24 <213> ORGANISM: Zea mays  
 26 <400> SEQUENCE: 1  
 27 ctgctgcac ccaatcccat ttaaatttta tcgtcaacaa ttctgtcttc tcggtttctg 60  
 28 acttatccg gggcattttt tttttcttgt ttcgagcctg tgagtctgat tccattttga 120  
 29 cccatggcgg cggcggcggc ggcgggtcat gagccggagg tgatccgcga caaggcggcg 180  
 30 atgcgcgcgt ggtcgcgcgc ccgcgcgcgc gagggaaagg ccgtcgcctt agtccccacg 240  
 31 atgggcttcc tccacgaggg acacctctcg ctcatctccg cggccgtggc ggccctccgc 300  
 32 ggccccatcg ccgtcgtcgt ctccatctac gtcaacccca gccagttcgc ccccaccgag 360  
 33 gacctcgcca cctacccctc cgacttcgcc ggcgacctcc gcaagctggc cgccaccggg 420  
 34 gtcgtcgcgc cagtattttg tccccagac ctctacgtcc gcggcagcgc tgatcgcccc 480  
 35 tccgcgcgcg gcgcgtccgg gggcgcgggt tcttgccctg aggatgcagg tgggcatgcg 540  
 36 caccgagacg ggattcgggt ggagcggctg gagaaggggc tgtgcgggag cagcaggcct 600  
 37 gtcttcttcc gcggcgtggc caccgtggtc gccaaagtgt tcaatatcgt ggagccggac 660  
 38 gtcgcgcgtg tcgggaagaa ggattatcag cagtggcgcg tcatttgctg gatggttcgt 720  
 39 gatctcgatt ttgccataca gatagttggt tcggaagtag tgcgagaagc tgatggtctt 780  
 40 gcaatgagct ctgcgaatgt aaatctgtca gaggaggata gaaagaaggc gttatcgatc 840  
 41 agtagatcgc tggtggatgc tagaaccgcc gccctcagtg gaagcaaccg tagccaagaa 900  
 42 ataaaagatc aaatagtgcg tacaattaca gaagctggcg gtcaggttga ctatgttgag 960  
 43 attgtggggc aggaaagctt ggtgcctgtg gagaggatgg accgcccttg tgtaatttgt 1020  
 44 gtcgcggcat ggtttggaag ggtcaggcta attgacaaca tcgagatcca tgtagatagc 1080  
 45 tctactgttt tgtctatctg atgaacgaag atgttttagac acacggcaaa atggcatacc 1140  
 46 actttctacg tagcagtagc agaccaagaa taaatagcat gatgggctga atctggatag 1200  
 47 aagaccatga gctcagtgt agccattctt gaactgctag aatgcagaga ataagtactt 1260  
 48 tcacagtttc agtcaagcta aggcagcaca aatgaatctt aggcattctt aaagtactca 1320  
 49 acacattggg ggaaaaaaga aaggacatta atgactgaat cttcgaagct tgtggttaaa 1380  
 50 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1440  
 51 aaa 1443  
 53 <210> SEQ ID NO: 2  
 54 <211> LENGTH: 325

## RAW SEQUENCE LISTING

DATE: 01/23/2002

PATENT APPLICATION: US/10/033,269

TIME: 11:30:38

Input Set : A:\BB1446 US NA Seq Listing.txt

Output Set: N:\CRF3\01232002\J033269.raw

55 &lt;212&gt; TYPE: PRT

56 &lt;213&gt; ORGANISM: Zea mays

58 &lt;400&gt; SEQUENCE: 2

```

59 Met Ala Ala Ala Ala Ala Val His Glu Pro Glu Val Ile Arg Asp
60   1           5           10           15
62 Lys Ala Ala Met Arg Ala Trp Ser Arg Arg Arg Ala Glu Gly Lys
63           20           25           30
65 Ala Val Ala Leu Val Pro Thr Met Gly Phe Leu His Glu Gly His Leu
66           35           40           45
68 Ser Leu Ile Ser Ala Ala Val Ala Ala Ser Ala Gly Pro Ile Ala Val
69           50           55           60
71 Val Val Ser Ile Tyr Val Asn Pro Ser Gln Phe Ala Pro Thr Glu Asp
72  65           70           75           80
74 Leu Ala Thr Tyr Pro Ser Asp Phe Ala Gly Asp Leu Arg Lys Leu Ala
75           85           90           95
77 Ala Thr Gly Val Val Ala Ala Val Phe Cys Pro Pro Asp Leu Tyr Val
78           100          105          110
80 Arg Gly Ser Ala Asp Arg Pro Ser Ala Ala Gly Ala Ser Gly Gly Ala
81           115          120          125
83 Val Ser Cys Leu Glu Asp Ala Gly Gly His Ala His Glu Thr Trp Ile
84           130          135          140
86 Arg Val Glu Arg Leu Glu Lys Gly Leu Cys Gly Ser Ser Arg Pro Val
87 145          150          155          160
89 Phe Phe Arg Gly Val Ala Thr Val Val Ala Lys Leu Phe Asn Ile Val
90           165          170          175
92 Glu Pro Asp Val Ala Val Phe Gly Lys Lys Asp Tyr Gln Gln Trp Arg
93           180          185          190
95 Val Ile Cys Arg Met Val Arg Asp Leu Asp Phe Ala Ile Gln Ile Val
96           195          200          205
98 Gly Ser Glu Val Val Arg Glu Ala Asp Gly Leu Ala Met Ser Ser Arg
99           210          215          220
101 Asn Val Asn Leu Ser Glu Glu Asp Arg Lys Lys Ala Leu Ser Ile Ser
102 225          230          235          240
104 Arg Ser Leu Val Asp Ala Arg Thr Ala Ala Leu Ser Gly Ser Asn Arg
105           245          250          255
107 Ser Gln Glu Ile Lys Asp Gln Ile Val Arg Thr Ile Thr Glu Ala Gly
108           260          265          270
110 Gly Gln Val Asp Tyr Val Glu Ile Val Gly Gln Glu Ser Leu Val Pro
111           275          280          285
113 Val Glu Arg Met Asp Arg Pro Cys Val Ile Cys Val Ala Ala Trp Phe
114           290          295          300
116 Gly Lys Val Arg Leu Ile Asp Asn Ile Glu Ile His Val Asp Ser Ser
117 305          310          315          320
119 Thr Val Leu Ser Ile
120           325
122 <210> SEQ ID NO: 3
123 <211> LENGTH: 1831
124 <212> TYPE: DNA
125 <213> ORGANISM: Zea mays

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/033,269

DATE: 01/23/2002

TIME: 11:30:38

Input Set : A:\BB1446 US NA Seq Listing.txt

Output Set: N:\CRF3\01232002\J033269.raw

127 &lt;400&gt; SEQUENCE: 3

```

128 gcacgagggga aaatttccttg atttccctct ttatcttctg catcccaactc ccattttactg 60
129 ttctttgttc cgtttttctaa tgagccaccg cgtcttctt tatctgctgc atcccaatcc 120
130 catttaaaatt ttgtcgtcaa caatttcgtc ttctcgttt ctgacttatt ccggggcatt 180
131 ttttttttctt gtttcgagcc tgtgagcctg attccatttt gacctatggc ggcggcggcg 240
132 gttcatgagc cggaggtgat ccgcgacaag gcggcgatgc gcgcgtggc gcgccgccgc 300
133 cgcgcggagg gaaaggccgt cgttttagtc cccacgatgg gcttctcca cgagggacac 360
134 ctctcgtcgc tctccgcggc cgtggcggcc tccgcggcc cgtcgcctg cgtcgtctcc 420
135 atctacgtca accccagcca gttcgccccc accgaggacc tcgccacct cccctccgac 480
136 ttgcgcggcg acctcggcaa gctggccgcc accggggtcg tcgccgcagt attttgcccc 540
137 ccggacctct acgtccgcgg cagcgtctgac cgcctctcc cgcgcagcgc gtccgggggc 600
138 gcggtgtctt gcctggagga tgcaggtggg catgcgcacg agacgtggat tcgggtggag 660
139 cggctggaga aggggctgtg cgggagcagc aggcctgtct tcttccgcgg cgtggccacc 720
140 gtggtcgcca agctgttcaa tatcgtggag ccggacgtcg cgtgttcgg gaagaaggat 780
141 tatcagcagt ggcgcgtcat ttgtcggatg gttcgtgatc ttgattttgc catacagata 840
142 gttggttcgg aggtagtgcg agaagctgat ggtcttgcaa tgagctctcg caatgtaaat 900
143 ctgtcagagg aggatagaaa gaaggcgtta tcgatcagta gatcactggt ggatgctaga 960
144 accgccaccc tcagtggaa gcaaccgtagc caagagataa aagatcaaat agtgccgaca 1020
145 attacagaag ctggcgggtca ggttgactat gttgagattg tggagcagga aagcttggtg 1080
146 cctgtggaga ggatggaccg cccttggtga atttgtgtcg cggcatggtt tggaaaggtc 1140
147 aggctaattg acaacatcga gatccatgta gatagctcta ctgttttgtc tatctgatga 1200
148 acgaagatgt ttagacacgg caaaatggca taccactttc tacgtagcag tagcagacca 1260
149 agaataaata gcatgatggg ctgaatctgg atagaagacc atgagctcag tgctagccat 1320
150 tcttgaactg ctagaatgca gagaataagt actttcacag tttcagtcaa gctaaggcag 1380
151 cacaaatgaa tcttaggcat ctctaaagta ctcaacacat tgggggaaaa aagaaaggac 1440
152 attaatgact gaatcttcga agcttgtgat acatttcttt aaaaaaaaaa agattttaca 1500
153 ttagcttctc tcgttagtca ccagatgcac tctatagtta ccggaggctc aagggcgctt 1560
154 aaaatctcaa gcatgagcaa tcaatctggc cggacatctt ggttctcaac tgccattga 1620
155 tacttgatc aagcactctg ccaataacaa aactactcga actccagcag ctccctgtct 1680
156 cgctcactat cttaaactcc atgcggtaaa cagtataaaa acagtgtttt gtacatccat 1740
157 atacatgatc cgccgaagac ggtctaagg tgcataaatg tatttctctt tttgttgttt 1800
158 taaaaaaaaa aaaaaaaaaa aaaaaaaaaa a 1831

```

161 &lt;210&gt; SEQ ID NO: 4

162 &lt;211&gt; LENGTH: 323

163 &lt;212&gt; TYPE: PRT

164 &lt;213&gt; ORGANISM: Zea mays

166 &lt;400&gt; SEQUENCE: 4

```

167 Met Ala Ala Ala Ala Val His Glu Pro Glu Val Ile Arg Asp Lys Ala
168   1           5           10           15
170 Ala Met Arg Ala Trp Ser Arg Arg Arg Arg Ala Glu Gly Lys Ala Val
171           20           25           30
173 Ala Leu Val Pro Thr Met Gly Phe Leu His Glu Gly His Leu Ser Leu
174           35           40           45
176 Val Ser Ala Ala Val Ala Ala Ser Ala Gly Pro Val Ala Val Val Val
177           50           55           60
179 Ser Ile Tyr Val Asn Pro Ser Gln Phe Ala Pro Thr Glu Asp Leu Ala
180  65           70           75           80
182 Thr Tyr Pro Ser Asp Phe Ala Gly Asp Leu Gly Lys Leu Ala Ala Thr
183           85           90           95

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/033,269

DATE: 01/23/2002

TIME: 11:30:38

Input Set : A:\BB1446 US NA Seq Listing.txt

Output Set: N:\CRF3\01232002\J033269.raw

```

185 Gly Val Val Ala Ala Val Phe Cys Pro Pro Asp Leu Tyr Val Arg Gly
186          100          105          110
188 Ser Ala Asp Arg Pro Ser Ala Ala Ser Ala Ser Gly Gly Ala Val Ser
189          115          120          125
191 Cys Leu Glu Asp Ala Gly Gly His Ala His Glu Thr Trp Ile Arg Val
192          130          135          140
194 Glu Arg Leu Glu Lys Gly Leu Cys Gly Ser Ser Arg Pro Val Phe Phe
195 145          150          155          160
197 Arg Gly Val Ala Thr Val Val Ala Lys Leu Phe Asn Ile Val Glu Pro
198          165          170          175
200 Asp Val Ala Val Phe Gly Lys Lys Asp Tyr Gln Gln Trp Arg Val Ile
201          180          185          190
203 Cys Arg Met Val Arg Asp Leu Asp Phe Ala Ile Gln Ile Val Gly Ser
204          195          200          205
206 Glu Val Val Arg Glu Ala Asp Gly Leu Ala Met Ser Ser Arg Asn Val
207          210          215          220
209 Asn Leu Ser Glu Glu Asp Arg Lys Lys Ala Leu Ser Ile Ser Arg Ser
210 225          230          235          240
212 Leu Val Asp Ala Arg Thr Ala Thr Leu Ser Gly Ser Asn Arg Ser Gln
213          245          250          255
215 Glu Ile Lys Asp Gln Ile Val Arg Thr Ile Thr Glu Ala Gly Gly Gln
216          260          265          270
218 Val Asp Tyr Val Glu Ile Val Glu Gln Glu Ser Leu Val Pro Val Glu
219          275          280          285
221 Arg Met Asp Arg Pro Cys Val Ile Cys Val Ala Ala Trp Phe Gly Lys
222          290          295          300
224 Val Arg Leu Ile Asp Asn Ile Glu Ile His Val Asp Ser Ser Thr Val
225 305          310          315          320
227 Leu Ser Ile
228          323

```

231 &lt;210&gt; SEQ ID NO: 5

232 &lt;211&gt; LENGTH: 1644

233 &lt;212&gt; TYPE: DNA

234 &lt;213&gt; ORGANISM: Eucalyptus grandis

236 &lt;400&gt; SEQUENCE: 5

```

237 gaaaccactg aagaccgcgt tgcattctcc ttcttgccctt acccaaattc ctgctgctct 60
238 ccctctccca tccgatccca cgaaattccc ttctttccaa tcccttccgg tgtcctcctc 120
239 caatggcggc gcccccgaag gagccgctgg tcatcaccca caaggccgag atgcgggagt 180
240 ggtcgaggtc cgcgcggcgc cagggcagga ccacgcctct cgtgccacc atgggtttcc 240
241 tccacgaggg ccacctgtcc ctgcgtccgg aggcccgccg ccgcgccgac gccgtcgttg 300
242 tctccgtcta cgtgaacccc ggccagttcg cccctccga ggacctctc acgtacccat 360
243 ctgatttcga gggcgacctg ggcaagctca gggccgtccc cggcggcgtg gacgtcgtct 420
244 ttcgtcccca gaattctttac gactacggtc aacgcgaggt cgggtggctct ggcgttgaga 480
245 gcgataatgg gtccgtgtct tgtttggagg agaagggcat ggggcacgag gcgtgggtga 540
246 ggggtggagag gttggagaag ggcattgtgc ggaagagcag gcccggtgtt ttccgagggg 600
247 tggccactgt ggtcaccaag ctgttcaaca ttgtggagcc ggatgtgagt gttttcggga 660
248 agaaggatta ccagcagtg cggatcattc ggcgggttgt gagtctcttc tattcgaatt 720
249 cgagcatcgg taattcgggt gtggcgggac aaagggtga agctgagaaa agtacattac 780
250 tcttccaatt tgtatgatag ccttgcttgt cgaatggagt cattgtcagt gcatatgcca 840

```

## RAW SEQUENCE LISTING

DATE: 01/23/2002

PATENT APPLICATION: US/10/033,269

TIME: 11:30:38

Input Set : A:\BB1446 US NA Seq Listing.txt

Output Set: N:\CRF3\01232002\J033269.raw

```

251 gtttcggagt tgttggcggg ttttggcggg gactatgact caattggcag agtgggtgga 900
252 ttagatttaa ttgaaaatc tgatggtgtt ttagtcatag gtgaaagatt ctgttctatg 960
253 ctcttgggaa ggctggttgc taatgatttg gattgctgtt gttcttttga tgttctgctg 1020
254 ccacatatgg agatgcgttt acttcatatt tctgaacaga aagtttgagg ctgcttggct 1080
255 atgaacgtta tttgtggatt gggattttta ctctgttaca actatgttga gtaattcaac 1140
256 atgaggagct tcaacggttc aagatcttga cttttccata caagtgatag gttctgaggt 1200
257 catgcgagat catgatggcc ttgcgctaag ctacgcaat gtgcatctct cacctgaaga 1260
258 aagggaaaag gcattgtcca taagcaggtc attgtcaaga gctaaatctg ctgcgaaaaa 1320
259 ggggtcaagtt aactgccaaa atctaaagga ctccgtcatc caagcaatac aggaagctgg 1380
260 tgggaagatt gattatgctg agattgtaga tcaagagagt ttagaggcag ttgaagaaat 1440
261 caggagcccc gtcgtctcct gtgtcgcgcg ctggtttggg aaggtcaggc tgattgataa 1500
262 catagaaatc aatgtatgaa ggaacacctt tgtgctcgtc atctcatcat gaggaagggt 1560
263 tctctttttc tttctgcttc tgtggcagcc gaaatgactg gtctctgtcg gtggcattta 1620
264 cacgataaaa aaaaaaaaaa aaaa 1644

```

267 &lt;210&gt; SEQ ID NO: 6

268 &lt;211&gt; LENGTH: 1183

269 &lt;212&gt; TYPE: DNA

270 &lt;213&gt; ORGANISM: Eucalyptus grandis

272 &lt;400&gt; SEQUENCE: 6

```

273 gaaaccactg aagacccgct tgcattctcc ttcttgcctt acccaaattc ctgctgctct 60
274 ccctctccca tccgatccca cgaaattccc ttctttccaa tcccttccgg tgtcctcctc 120
275 caatggcggc gccccccaag gagccgctgg tcatcaccga caaggccgag atgcgggagt 180
276 ggtcgaggtc cgcgcggcgc cagggcagga ccacgcctc cgtgccacc atgggtttcc 240
277 tccacgaggg ccacctgtcc ctgctccggg aggcccgccg ccgcgcgcac gccgtcgtgg 300
278 tctcctgcta cgtgaacccc ggccagttcg cccctccga ggacctctg acgtacccat 360
279 ctgatttcga gggcgacctg ggcaagctca gggccgtccc cggcgcgctg gacgtcgtct 420
280 ttcgtcccca gaatctttac gactacggtc aacgcgaggt cgggtgctct ggcgttgaga 480
281 gcgataatgg gtccgtgtct tgtttggagg agaagggcat ggggcacgag gcgtgggtga 540
282 ggggtggagag gttggagaag ggcattgtcg ggaagagcag gcccggtgtc tttcgagggg 600
283 tggccactgt ggtcaccaag ctgttcaaca ttgtggagcc ggatgtgagt gttttcggga 660
284 agaaggatta ccagcagtgg cggatcattc ggcggttggg gaatcttgac ttttccatac 720
285 aagtgatagg ttctgaggtc atgcgagatc atgatggcct tgcgctaagc tcacgcaatg 780
286 tgcattctct acctgaagaa agggaaaagg cattgtccat aagcaggtea ttgtcaagag 840
287 ctaaattctg tgcggaaaag ggtcaagtta actgccaaaa tctaaaggac tccgtcatcc 900
288 aagcaataca ggaagctggt gggaagattg attatgctga gattgtagat caagagagtt 960
289 tagaggcagt tgaagaaatc aggagccccg tcgtctcctg tgtcgcgcgc tgggtttggg 1020
290 aggtcaggct gattgataac atagaaatca atgtatgaag gaacaccttt gtgctcgtca 1080
291 tctcatcatg aggaagggtt ctctttttct ttctgcttct gtggcagccg aaatgactgg 1140
292 tctctgtcgg tggcatttac acgataaaaa aaaaaaaaaa aaa 1183

```

294 &lt;210&gt; SEQ ID NO: 7

295 &lt;211&gt; LENGTH: 311

296 &lt;212&gt; TYPE: PRT

297 &lt;213&gt; ORGANISM: Eucalyptus grandis

299 &lt;400&gt; SEQUENCE: 7

```

300 Met Ala Ala Pro Pro Lys Glu Pro Leu Val Ile Thr Asp Lys Ala Glu
301   1             5             10             15
303 Met Arg Glu Trp Ser Arg Ser Ala Arg Arg Gln Gly Arg Thr Ile Ala
304             20             25             30
306 Leu Val Pro Thr Met Gly Phe Leu His Glu Gly His Leu Ser Leu Val

```



## VERIFICATION SUMMARY

DATE: 01/23/2002

PATENT APPLICATION: US/10/033,269

TIME: 11:30:39

Input Set : A:\BB1446 US NA Seq Listing.txt

Output Set: N:\CRF3\01232002\J033269.raw

L:11 M:270 C: Current Application Number differs, Replaced Application Number  
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date